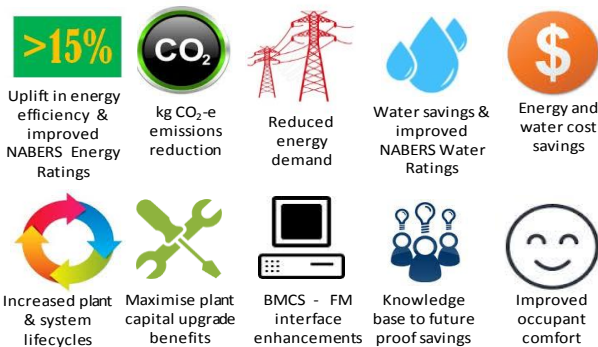


# Advisory note

A service to A.G.Coombs Group clients

## Building Tuning – Getting Buildings to Work Properly

**“Air-conditioning systems can consume over 50% of energy in buildings. Tuning HVAC systems to enable them to work properly is the ‘first best’ money you can spend to improve energy efficiency in a building.”**



**Make the most of what you have:** Up to 50% of energy efficiency gains for building equipment can be made by ensuring that systems work properly. The primary focus is usually the Heating Ventilating and Air-Conditioning (HVAC) systems; these constitute the majority of improvement potential and conversely the greater part of the energy wastage risk.

**It's a 'team sport':** Most buildings do not operate at optimal levels. Getting them to perform to where they are capable is a challenge that requires a strong and coordinated facility team effort involving building owner, facility manager, facility users, service providers and technical tuning experts.

**Review operation and develop a tuning program:** The program of tuning initiatives should consider the building's thermal and operational dynamics as a whole. Its primary focus will be control strategies and the refinement of the existing HVAC systems operation. The program should use the Building Management and Controls System (BMCS) as a diagnosis, tuning and reporting tool to optimise energy with the building's operational requirements.

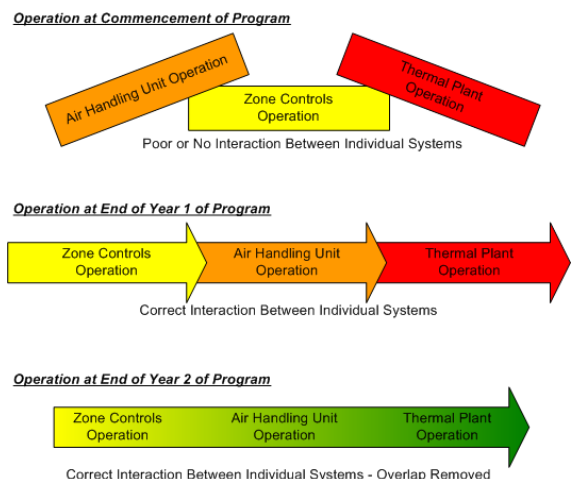
**Tuning philosophy:** While immediate efficiency gains can be made, a tuning approach including inbuilt seasonally adjusted energy conservation logic should be established over a 24-month period (two complete seasonal cycles). Energy efficiency maintenance strategies should be implemented to protect against energy wastage and should include ongoing tuning activities to assure ongoing efficient operation, also identifying additional improvements.

**No progress without stability:** In many facilities, HVAC systems and subsystems do not operate in a stable fashion. A check of systems operation should be performed.

Are the current control strategies and control loops operating in a stable, reliable and repeatable manner? Before energy usage can be optimised these systems must be tuned to operate properly, which can lead to better system performance and less wear on plant.

**Right gauges and levers:** Often the first challenge in tuning building systems and optimising energy usage is gaining access to the right level of information and control from the BMCS. The control system should be configured to provide the required information and 'tools' to allow for energy efficient operation, fine tuning, energy optimisation and fault finding.

**Keeping on Track:** Energy efficiency in facilities is not 'set and forget'; an accurate energy metering and energy efficiency reporting system is essential, along with making it someone's job to pay attention! Energy usage dashboards can be very useful tools.



**Role of 'Big Data':** Modern computing power allows building performance to be measured from a whole new perspective. This provides fresh insights into building operation and system performance, energy efficiency and operating costs. Best results are being achieved when this approach is applied after the energy consuming systems have been tuned to operate properly and optimised for energy efficiency.

**For more information on building tuning, visit:**  
<http://www.environment.nsw.gov.au/business/hvac-guide.htm>  
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